Annual Report of Operations for Year 2021

To comply with NPDES General Permit No. WAG130000 for Federal Aquaculture Facilities and Aquaculture Facilities Located in Indian Country within the Boundaries of the State of Washington

NPDES # for your Facility:
WAG-13-0017

Facility & Owner Information

Facility Name: Skookum Creek Hatchery	
Operator Name (Permittee): Lummi Indian Business Council	
Address:	
Physical Adress: 6498 Saxon Rd Acme, WA 98220	Lummi Indian Business Council 2665 Kwina Road Bellingham, WA 98226
Email: tomc@lummi-nsn.gov	Phone: 360-312-2320
Owner Name (if different from operator):	
Email:	Phone:

Best Management Practices (BMP) Plan

Has the BMP Plan been reviewed this year? ■ Yes ☐ No

Does the BMP Plan fulfill the requirements of the General Permit? ■ Yes ☐ No

Summarize any changes to the BMP Plan since the last annual report. Attach additional pages if necessary.

No applicable or necessary changes to the BMP were warranted.

EPA General Permit WAG130000 - Annual Report

Operations and Production

Total harvestable weight produced in the past calendar year in pounds (lbs): 90,993

Pounds of food fed to fish during the maximum month: 8,936

List the species grown or held at your facility and the annual production of each in gross harvestable weight. If fish were released rather than harvested, list the weight at time of release.

Species	Fish Produced	Receiving Water(s) to which Fish were Released	Month Released/ Spawned
Chinook Salmon		South Fork Nooksack River	April & June
Coho Salmon		South Fork Nooksack River	May

Fill in the table below with production numbers from the past year. List the **maximum** amount of fish on-site and the maximum amount of food fed **per month**.

Month	Total Fish (lbs)	Fish Feed (lbs)	Month	Total Fish (lbs)	Fish Feed (lbs)
January	48,301	2,599	July	8,656	3,872
February	55,791	3,698	August	9,380	4,620
March	76,921	5,864	September	9,790	4,346
April	65,493	2,088	October	12,941	3,168
May	90,993	8,936	November	12,941	528
June	18,430	0	December	12,941	1,232

Additional Comments: Total fish pounds for October-December did not increase a detectable amount above expected weight-based error due to a maintenance ration being fed.

Solid Waste Disposal

Describe the solid waste disposed of during the calendar year (including fish mortalities).

Type of Solid Disposed	Date Disposed	Location Disposed
Fecal Waste (from yearling pond drawdowns)	June	OSLB
Juvenile Mortalities	Daily (or as needed)	Septic System
Adult Carcasses	Weekly (August-December)	Crab bait, nutrient enhancement
Pond Vacuum Waste	Daily/Weekly	OSLB
Additional Comments:		

Fish Mortalities

Include a description and the dates of mass mortalities in the past year (more than 5% per week). Attach additional pages, if necessary. Include total mortalities from all causes.

Date	Cause of Deaths	Steps Taken to Correct Problem	Pounds of Fish
Additional Comments: No mass mortality events ≥5.0%.			

Noncompliance Summary

Include a description and the dates of noncompliance events (including spills), the reasons for the incidents, and the steps taken to correct the problems. Attach additional pages, if necessary.

An all-time record flood event occurred in Skookum Creek at the time of sampling. Influent TSS sample results were 366mg/L with a gross effluent of 382mg/L. Total suspended solids (TSS) net effluent exceeded 5.0MO AVG and 15.0 INST MAX. Net TSS values were 16.0 for both. Settleable solids results were abnormally high but did not exceed the gross limit. It was concluded that the extreme stream discharge of Skookum Creek resulted in high sediment loads settling within rearing ponds of the facility and variable stream flows in addition to the restoration of surface water to the hatchery after the intake was clogged with heavy sediment materials disturbed accumulated sediment. Please note that due to the total water volume potential of the hatchery in addition to high retention rates of certain rearing ponds (>10 hours), suspended solids are able to flocculate within the hatchery facility during periods of high influent TSS concentrations, per Stokes' Law. High accumulated sediment loadings were removed from all active rearing ponds, water delivery systems, and the settling pond. The settling pond exceeded sediment capacity and was not functional until stream flows subsided and could be cleaned out. The TSS values reported in the November DMR were not representative of sediment influent or effluent the month of November. Due to a sampling date of November 29th, it was not possible to re-sample during the monitoring period. Aside from more representative DMR sampling, corrections to avoid permit effluent exceedence and non-compliance will require rehabilitation of habitat function upstream of the hatchery facility and a moratorium to industrial logging, especially the cessation of large (>500 acre) clearcuts on extreme gradient (>35°) hillsides in the geologically unstable Skookum Creek drainage.

Inspections & Repairs for Production & Wastewater Treatment Systems

Date Inspected	Date Repaired	Description of System Inspected and/or Repaired
Monthly	N/A	Abatement system, vacuum systems, and waste drainlines
Weekly	N/A	Water delivery lines, fish ladder, pumps, filters, and valves

Aquaculture Drugs and Chemicals

Please indicate whether you used each drug/chemical **during the past calendar year.**
Describe the use of each drug/chemical in more detail on the following pages.

Used in the past year?	Drug or Chemical
☐ Yes ☒ No	Azithromycin
☒ Yes ☐ No	Chloramine-T: ***See additional reporting requirements on page 7***
☐ Yes ☒ No	Chlorine
☐ Yes ☒ No	Draxxin
☐ Yes ☒ No	Erythromycin - injectable
☐ Yes ☒ No	Erythromycin - medicated feed
☐ Yes ☒ No	Florfenicol (Aquaflor)
☐ Yes ☒ No	Formalin - 37% formaldehyde: ***See additional reporting requirements on page 7***
☐ Yes ☒ No	Herbicide - describe:
☐ Yes ☒ No	Hormone - describe:
☐ Yes ☒ No	Hydrogen Peroxide: ***See additional reporting requirements on page 7***
☒ Yes ☐ No	Iodine: ***See additional reporting requirements on page 7***
☐ Yes ☒ No	Oxytetracycline
☒ Yes ☐ No	Potassium Permanganate: ***See additional reporting requirements on page 7***
☐ Yes ☒ No	Romet
☐ Yes ☒ No	SLICE (emamectin benzoate)
☐ Yes ☒ No	Sodium Chloride - salt
☐ Yes ☒ No	Vibrio vaccine
☐ Yes ☐ No	Other:
☐ Yes ☐ No	Other:

Aquaculture Drugs and Chemicals (cont'd)

Describe all drug and/or chemical treatments that occurred during the year. Fill out the information below for each drug or chemical, plus page 7 for water-borne treatments. Attach additional pages as necessary.

Brand Name: Halamid Aqua		Generic Name: Chloramine-T	
Reason for use: Treatment for bacterial gill disease			
☐ Preventative/Prophylactic ■ As-needed	Total quantity of formulated product per treatment (specify units): 450g/850g	Total quantity of formulated product used in past year (specify units): 2,600g	
Date(s) of treatment: March 13 - 16, 2021			Total number of treatments in past year: 12
Maximum daily volume of treated water:	Treatment concentration (specify units): 12 ppm	Duration and frequency of treatment(s): 1 hour/pond/day for 3 consecutive days	
Method of application:	■ Static Bath ☐ Flow-through	☐ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	■ Raceways ☐ Incubation building	☐ Ponds ☐ Off-line settling basin	☐ Other (describe):
Where did water treated with this chemical go? (check all that apply):	■ Discharged w/o treatment ☐ Settling basin	☐ Septic System ☐ Publicly owned treatment works	☐ Other (describe):
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use: Standard application per veterinarian's direction.			

Brand Name: Ovadine		Generic Name: Buffered PVP Iodine (1%)	
Reason for use: Control and prevention of *Saprolegnia*			
■ Preventative/Prophylactic ☐ As-needed	Total quantity of formulated product per treatment: Highly variable*	Total quantity of formulated product used in past year (specify units): 45 gallons	
Date(s) of treatment: Mid-September to early December daily			Total number of treatments in past year: Appx. 70
Maximum daily volume of treated water: < 3,000L/day	Treatment concentration (specify units): 100ppm	Duration and frequency of treatment(s): Duration of 10 minutes twice/day/incub.	
Method of application:	☐ Static Bath ■ Flow-through	☐ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	☐ Raceways ■ Incubation building	☐ Ponds ☐ Off-line settling basin	☐ Other (describe):
Where did water treated with this chemical go? (check all that apply):	■ Discharged w/o treatment ☐ Settling basin	☐ Septic System ☐ Publicly owned treatment works	☐ Other (describe):
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use: *Each individual vertical and Nopad incubator is treated per development schedule			

Aquaculture Drugs and Chemicals (cont'd)

Additional Reporting Requirements for Water-Borne Treatments

- If a water-borne treatment was used during the calendar year, Permittees must include detailed records/calculations as an attachment to this Annual Report in order to demonstrate how the maximum effluent concentrations of solution and active ingredient were calculated for each chemical.
- EPA recognizes that water-borne treatments may vary in the volume of the vessels treated, concentration, quantity of product, etc. Permittees must provide the information listed in the following tables for a reasonable worst case (i.e., maximum effluent concentration) scenario, not for each individual treatment.
- Permittees must submit this information and calculate the maximum effluent concentration for each water-borne chemical used during the past calendar year.
- See also Appendix D for the Chemical Log Sheet.

Static Bath Treatments Chloramine-T		
Tank Volume	13,337	Liters
Desired Static Bath Treatment Concentration	12,000	µg/L
Volume of Product Needed	850g in 18.93 L	Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: ≤ 20ug/L Active Ingredient: ≤ 20ug/L	Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	5,150,000 GPD	Specify Units
Maximum % of Facility Discharge Treated	5.0	% of Total Discharge

Flow-Through Treatments PVP Iodine		
Tank Volume	267.4 or 9.46	Liters
Calculated Flow Rate	34 or 15	Liters/Minute
Duration of Treatment	10	Minutes
Desired Flow-Through Treatment Concentration of Product	10,000	µg/L
Amount of Product to Add Initially	0.2L or 0.1L (per incubator)	Liters Product
Amount of Product to Add During Treatment	200mL or 100mL	mL/Minute
Total Volume of Product Needed	0.2L or 0.1L (per incubator)	Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: 0.47ppb Active Ingredient: 0.0047ppb	Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	16,637,760	Specify Units
Maximum % of Facility Discharge Treated	1.25%	% of Total Discharge

Aquaculture Drugs and Chemicals (cont'd)

Describe all drug and/or chemical treatments that occurred during the year. Fill out the information below for each drug or chemical, plus page 7 for water-borne treatments. Attach additional pages as necessary.

Brand Name: Potassium Permanganate		Generic Name: $KMnO_4$	
Reason for use: Control and prevention of bacterial gill disease			
☐ Preventative/Prophylactic ■ As-needed	Total quantity of formulated product per treatment (specify units): 1363g	Total quantity of formulated product used in past year (specify units): 5452g	
Date(s) of treatment: May 22 - May 25, 2021			Total number of treatments in past year: 4
Maximum daily volume of treated water: 278,775 L	Treatment concentration (specify units): Appx. 2 ppm	Duration and frequency of treatment(s): 1 hour, once per day	
Method of application:	☐ Static Bath ■ Flow-through	☐ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	☐ Raceways ☐ Incubation building	■ Ponds ☐ Off-line settling basin	☐ Other (describe):
Where did water treated with this chemical go? (check all that apply):	■ Discharged w/o treatment ☐ Settling basin	☐ Septic System ☐ Publicly owned treatment works	☐ Other (describe):
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use:			

Brand Name:		Generic Name:	
Reason for use:			
☐ Preventative/Prophylactic ☐ As-needed	Total quantity of formulated product per treatment:	Total quantity of formulated product used in past year (specify units):	
Date(s) of treatment:			Total number of treatments in past year:
Maximum daily volume of treated water:	Treatment concentration (specify units):	Duration and frequency of treatment(s):	
Method of application:	☐ Static Bath ☐ Flow-through	☐ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	☐ Raceways ☐ Incubation building	☐ Ponds ☐ Off-line settling basin	☐ Other (describe):
Where did water treated with this chemical go? (check all that apply):	☐ Discharged w/o treatment ☐ Settling basin	☐ Septic System ☐ Publicly owned treatment works	☐ Other (describe):
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use:			

Aquaculture Drugs and Chemicals (cont'd)

Additional Reporting Requirements for Water-Borne Treatments

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- Permittees must submit this information and calculate the maximum effluent concentration for each water-borne chemical used during the past calendar year.
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Static Bath Treatments	
Tank Volume	Liters
Desired Static Bath Treatment Concentration	µg/L
Volume of Product Needed	Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: Active Ingredient: Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	Specify Units
Maximum % of Facility Discharge Treated	% of Total Discharge

Flow-Through Treatments Potassium Permanganate	
Tank Volume	278,775 Liters
Calculated Flow Rate	2,271 Liters/Minute
Duration of Treatment	60 Minutes
Desired Flow-Through Treatment Concentration of Product	~ 2,000 µg/L
Amount of Product to Add Initially	No pre-charge Liters Product
Amount of Product to Add During Treatment	4,550 mL/Minute
Total Volume of Product Needed	273 (dilute) Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: 14.9 ppb Active Ingredient: 14.9 ppb Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	16,637,760 L/day Specify Units
Maximum % of Facility Discharge Treated	0.83 % of Total Discharge

Changes to the Facility or Operations

Describe any changes to the facility or operations since the last annual report.
No reportable changes to facility or operations for 2021.

Signature and Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly evaluate and gather the information submitted. Based on my inquiry of the person or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed name of person signing	Title
Thomas M. Chance	Salmon Enhancement Program Manager
Applicant Signature	Date Signed 1/19/2022

Submittal Information

Send the complete, signed information, along with any attachments, to the following address:

U.S. EPA Region 10, OWW-191

Washington Hatchery Annual Report

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